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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

RILEY, SHAWN

ART UNIT	PAPER NUMBER
2838	

DATE MAILED: 01/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/681,813

Applicant(s)

BALL ET AL.

Examiner

Shawn Riley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-16 and 18-20 is/are rejected.
- 7) ☒ Claim(s) 10 and 17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on oct 03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawing(s) is(are) objected to because they fail to label (figure(s) 1,3 and 4) what the element boxes 11, 81, 80, 60, 71, 19, and 22 are. Without some indication as to the content of the boxes (or preferably ansi symbols of the actual elements) it is not clear as to what the elements are and they are not explanatory to a reader as a quick method of determining the general background of the invention.

See MPEP 608.02 subparagraph (o) -- **Legends**

Suitable descriptive legends may be used, or may be required by the Examiner, where necessary for understanding of the drawing, subject to approval by the Office. They should contain as few words as possible.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. E.g., Linear regulator with overcurrent protection.

Claim Objections

1. Claims 4, 6 & 7 are objected to under 37 C.F.R. 1.75(a) because of the following informalities: In claims 4, 6 and 7, the term '*liner*' is taken to mean linear for examination purposes. Appropriate correction is required.

Claim Rejections - 35 U.S.C. § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
2. Claims 1-2, 4-9, 11-12, 14-16, 18, and 20 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Perillo et al. (U.S. Patent 5,764,460).

As to claim 1;

A power supply control method comprising: coupling an input of a power supply system to receive an input voltage (V_{in} also represented as V_{ce}) having a period (period of zero); coupling a load (connected to V_{out}) to receive the input voltage; forming a power supply controller (REG) to generate a load current through the load when the input voltage (V_{ce}) is greater than a first voltage (V_z see, e.g., column 5 lines 38- column 7 line 22); and forming the power supply controller to disable the load current when the input voltage is greater than a second voltage (when the output voltage at V_{out} is higher than a designated value, the comparator C1, comparing it to a predesignated voltage produced by CSVG, shuts off/disables the output load current, see, e.g., column 4 lines 49 through column 5 line 33).

As to claim 2;

The method of claim 1 further including forming the power supply system to disable the load current when the input voltage is less than the first voltage (this occurs at the drop-out voltage, that is when the input voltage is too low for the regulator to function, see, e.g., column 7 lines 38-45).

As to claim 4;

The method claim 1 wherein forming the power supply controller to generate the load current through the load when the input voltage is greater than the first voltage includes forming the power supply controller to drive an output transistor (labeled as POWER) of the power supply controller in a *linear* mode (the invention as described in the patent is a linear regulator) to generate an instantaneous current that averages to a desired average current over the period (definition of a linear regulator wherein the regulator will because of time delays, over/under – shoot a desired output value and thus reach a desired average current over a defined period of time).

As to claim 5;

The method of claim 4 wherein forming the power supply controller to disable the load current when the input voltage is greater than the second voltage includes forming the power supply controller to disable the load current when a voltage drop across the output transistor is a third voltage (the voltage across the transistor

is taken by either C1 or the other comparator connected to Vbg) be taken as that is representative of the second voltage.

As to claim 6;

The method of claim 4 wherein forming the power supply controller to drive the output transistor of the power supply controller in the *liner* mode to generate the instantaneous current includes forming the power supply controller to generate an averaged signal that is representative of an average value of the load current (see above discussion in claim 4).

As to claim 7;

The method of claim 6 wherein forming the power supply controller to drive the output transistor of the power supply controller in the *liner* mode to generate the instantaneous current includes forming the power supply controller to generate a deviation signal representative of a difference between the averaged signal (averaged signal between Ra and Rb) and a reference signal (Vbg), and to generate an error signal representative of a difference between the deviation signal and the instantaneous current.

As to claim 8;

The method of claim 1 wherein forming the power supply controller to generate the load current through the load when the input voltage is greater than the first voltage; and forming the power supply controller to disable the load current when the input voltage is greater than the second voltage includes forming the power supply controller to generate the load current each time the input voltage is

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greater than the first voltage and less than the second voltage (i.e., operate when the voltage is in a normal range as Perillo et al do).

As to claim 9;

A power supply controller comprising (see also above rejections): an averaging circuit coupled to receive an input signal representative of a load current through a load of the power controller and form an averaged signal representative of an average value of the load current; a first amplifier (C1) coupled to receive the averaged signal and a first reference voltage responsively form a deviation signal representative of a difference between the averaged signal and the first reference voltage; a second amplifier (unlabeled comparator) coupled to receive the deviation signal and the input signal and responsively drive an output transistor to generate the load current through the load on a current output of the power controller; and a disable circuit (CSVG) coupled to responsively disable the output transistor when a voltage across the output transistor is greater than a first value.

As to claim 11 (see rejection of claim 7);

The power supply controller of claim 9 wherein the averaging circuit coupled to receive the input signal representative of the load current through the load of the power controller and form the averaged signal representative of the average value of the load current includes a sense circuit coupled to receive the load current, generate a sense current representative of the load current, generate a sense voltage from the sense current, and use the sense voltage as the input signal.

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As to claim 12 (see rejection of claim 8);

The power supply controller of claim 9 wherein the disable circuit coupled to responsively disable the output transistor when the voltage across the output transistor is greater than the first value includes a comparator coupled to receive the voltage across the output transistor and a reference voltage and responsively disable the output transistor.

As to claim 14;

The power supply controller of claim 9 wherein the first amplifier (C1 is a differential amplifier) coupled to receive the averaged signal and a first reference voltage includes a differential amplifier.

As to claim 15 (see rejection of claim 1);

A method of forming a power supply controller comprising: coupling an output transistor to form a load current through a load that is coupled to an output of the power supply controller; forming an averaging circuit to receive an input signal representative of the load current and responsively form an averaged signal representative of an average value of the load current; forming the power supply controller to generate a deviation signal representative of a difference between the averaged signal and a desired constant; forming the power supply controller to drive the output transistor responsively to a difference between the deviation signal and the input signal to generate an instantaneous value of the load current that will result in an average value of the load current over a first time period; and

forming a disable circuit coupled to responsively disable the output transistor when a voltage across the output transistor is greater than a first value.

As to claim 16;

The method of claim 15 wherein forming the disable circuit (including Q1) coupled to responsively disable the output transistor when the voltage across the output transistor is greater than the first value includes forming the disable circuit to disable the output transistor at least once during the first time period.

As to claim 18 (see rejection of claim 7);

The method of claim 15 wherein forming the power supply controller to generate the deviation signal representative of the difference between the averaged signal and the desired constant includes forming a deviation circuit having an amplifier coupled to receive the averaged signal and a reference signal and responsively form the deviation signal representative of the difference between the averaged signal and the reference signal.

As to claim 20 (see rejection of claim 8);

The method of claim 15 wherein forming the disable circuit coupled to responsively disable the output transistor when the voltage across the output transistor is greater than the first value includes forming a comparator coupled to receive the voltage across the output transistor and receive a reference voltage and responsively disable the output transistor when the voltage across the output transistor is greater than the reference voltage.

Claim Rejections - 35 U.S.C. § 103

2. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

3. Claims 3 and 19 are rejected under 35 U.S.C. § 103 as being unpatentable over Perillo et al. (U.S. Patent 5,764,460). The Perillo et al. reference discloses the limitations of the invention as claimed as described above. However, Perillo et al. does not show a rectifier at the input source. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use utilize a rectifier at the input source since the examiner takes Official Notice of the equivalence of a rectified ac input and dc input from a dc source for their use in the regulating art and the selection of any of these known equivalents to a method of rectifying or providing a rectified input would be within the level of ordinary skill in the art.

Claim 13 is rejected under 35 U.S.C. § 103 as being unpatentable over Perillo et al. (U.S. Patent 5,764,460). The Perillo et al. reference discloses the limitations of the invention as claimed as described above. However, Perillo et al. does not show a range of two to fifteen volts for the first voltage. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a range of two to fifteen volts for the first voltage, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Allowable Subject Matter

4. As allowable subject matter has been indicated, applicant's response must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 C.F.R. § 1.111(b) and section 707.07(a) of the M.P.E.P.

5. The following is an examiner's statement of reasons for allowance: No prior art uncovered anticipates or renders obvious applicant(s) claimed method including coupling a first amplifier to receive the input signal, coupling a filter to receive an output of the first amplifier, and coupling the output of the first amplifier to an input of a second amplifier. Further, no prior art uncovered anticipates or renders obvious applicant(s) claimed method including a transconductance amplifier coupled to receive the input signal and a filter coupled to an output of the transconductance amplifier.


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3. Claims 10 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry from other than the applicant/attorney of record concerning this communication or earlier communications from the Examiner should be directed to the Patent Electronic Business Center (EBC) at 1.866.217.9197. Any inquiry from a member of the press concerning this communication or earlier communications from the Examiner or the application should be directed to the Office of Public Affairs at 703.305.8341. Any inquiry from the applicant or an attorney of record concerning this communication or earlier communications from the Examiner should be directed to Examiner Riley whose telephone number is 571.272.2083. The Examiner can normally be reached Monday through Thursday from 7:30-6:00 p.m. Eastern Standard Time. The Examiner's Supervisor is Mike Sherry who can be reached at 571.272.2084. Any inquiry about a case's location, retrieval of a case, or receipt of an amendment into a case or information regarding sent correspondence to a case **should be directed to 2800's Customer Service Center** at 571.272.2815. Any papers to be sent by fax MUST BE sent to fax number 703.872.9306. Any inquiry of a general nature of this application should be **directed to the Group receptionist** whose telephone number is 571.272.2800. Status information of cases may be found at <http://pair-direct.uspto.gov> wherein unpublished application information is found through private PAIR and published application information is found through public PAIR. Further help on using the PAIR system is available at 1.866.217.9197 (Electronic Business Center).

January 05


Shawn Riley
Primary Examiner